

EXHIBIT B

Federal Communications Commission**FCC 21-83**

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)
)
)
 Amendment of Section 15.255 of the) ET Docket No. 21-264
 Commission's Rules)

NOTICE OF PROPOSED RULEMAKING

Adopted: July 13, 2021

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Comment Date: 30 days after Federal Register publication

Reply Comment Date: 60 days after Federal Register publication

By the Commission: Acting Chairwoman Rosenworcel and Commissioners Carr and Starks issuing separate statements.

I. INTRODUCTION

1. In this Notice of Proposed Rulemaking (NPRM), we propose to revise our rules to provide expanded operational flexibility to unlicensed field disturbance sensor (FDS) devices (e.g., radars) that operate in the 57-64 GHz band (60 GHz band) under section 15.255 of our rules.¹ Our proposal recognizes the increasing practicality of using mobile radar devices in the 60 GHz band to perform innovative and life-saving functions, including gesture control, detection of unattended children in vehicles, and monitoring of vulnerable medical patients, and it is designed to stimulate the development of new products and services in a wide variety of areas to include, for example, personal safety, autonomous vehicles, home automation, environmental control, and healthcare monitoring, while also ensuring coexistence among unlicensed FDS devices and current and future unlicensed communications devices in the 60 GHz band.

2. We propose to update and streamline the rules for 60 GHz radar operations while promoting compatibility with the unlicensed communications operations that have long been permitted in the band, as well as to continue to ensure that all unlicensed operations in the band – whether operating as communications devices or FDS radars – do not cause harmful interference to licensed and authorized Federal and non-Federal users. Specifically, we propose to permit up to 20 dBm average EIRP, 10 dBm peak transmitter conducted output power, 13 dBm/MHz average EIRP power spectral density and 10% duty cycle in every 33 milliseconds (ms) interval for all FDS devices operating in the 57-64 GHz band; investigate the potential for mobile FDS devices to operate in the 61.0-61.5 GHz band at the same 40 dBm EIRP at which fixed FDS devices currently are permitted to operate; and ask whether we could permit radar devices that incorporate listen-before-talk, spectrum sensing, or other methods of coexistence to operate across the entire 57-71 GHz band at the same power level (i.e., 40 dBm EIRP) as currently is permitted for 60 GHz communication devices.

II. BACKGROUND

3. The Part 15 rules permit low-power intentional radiators (popularly known as “unlicensed devices”) to operate without an individual license where such use is not anticipated to cause

¹ 47 CFR § 15.255.

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fiber cable.”¹¹ When it finalized the rule by adopting a spectrum etiquette¹² three years later, it also included a provision that permitted fixed FDS operation in the band.¹³

6. In 2016, the Commission further expanded unlicensed device use in the band to permit limited mobile radar operations and to extend the use of fixed field disturbance sensors to the 64-71 GHz band. At that time, the Commission recognized that wireless innovation included the development of gesture-recognition technology using short-range radars that would allow users to interact with devices without needing to touch them.¹⁴ It thus decided to permit SRIMS radars while also noting that the record before it was insufficient to allow for the unfettered operation of mobile radars in the band. Specifically, the Commission’s decision permitted the “narrow application of mobile radars for short-range interactive motion sensing” at reduced power levels to ensure that they would successfully co-exist with co-channel communications devices already permitted to operate in the band.¹⁵ While the Commission did not adopt a specific definition for SRIMS, in permitting narrow use of short-range mobile radars it discussed the work of Google LLC (Google) in developing its “Soli” sensor technology, which envisioned that smartphones and other personal devices would be able to sense hand gestures when a user is located at a very short distance from the device to perform functions such as controlling web pages or answering phone calls.¹⁶ Furthermore, while the Commission specifically rejected comments calling on it to completely eliminate restrictions on FDS use, it also stated that it might consider allowing higher power levels in the future after it had acquired more experience with the devices it was permitting at that time.¹⁷

7. Since the 2016 decision, there has been continued interest in developing mobile radar applications that use the 60 GHz band. To date, the Commission’s Office of Engineering and Technology (OET) has granted focused waivers of the rules to support discrete applications. First, Google requested a waiver of the emission limits to allow Soli radar devices to operate at a higher output power level than what had been authorized in the rulemaking, arguing that it had determined that higher power levels were necessary for the radar sensor to provide sufficient resolution to engage in effective interactions.¹⁸ In its 2018 order granting that waiver, which was limited to use of the specific Soli sensor described in Google’s request, OET found that allowing Google Soli sensors to operate at the requested power levels would not materially change the operating environment in the 57-64 GHz band from the perspective of

¹¹ *Amendment of Parts 2, 15 and 97 of the Commission’s Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications*, ET Docket No. 94-124, First Report and Order and Second Notice of Proposed Rule Making, 11 FCC Rcd. 4481, 4488, para. 14 (1995).

¹² A spectrum etiquette is a set of rules to facilitate accessing and sharing of the same spectrum among all authorized users.

¹³ The provisions for fixed FDS operations was part of the spectrum etiquette developed by the Millimeter Wave Communications Working Group (MWCWG) at the behest of the Commission to facilitate coexistence of all 60 GHz devices in the 57-64 GHz band and adopted into the rules in 1998. See *Amendment of Parts 2, 15 and 97 of the Commission’s Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications*, ET Docket No. 19-124, Third Report and Order, 13 FCC Rcd 15074 (1998).

¹⁴ *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, GN Docket No. 14-117, FCC 16-89, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, 8133, para. 336 (2016).

¹⁵ *Id.*, 31 FCC Rcd at 8133-8134, para. 337.

¹⁶ *Id.* Google developed the Soli sensor to capture motion in a three-dimensional space using a radar beam, which enables persons to use gestures and motions to control a smartphone’s functions or features. See <https://atap.google.com/soli>.

¹⁷ *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, GN Docket No. 14-117, FCC 16-89, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd at 8133-8134, para. 337 (2016).

¹⁸ *Google LLC Request for Waiver of Section 15.255(c)(3) of the Commission’s Rules Applicable to Radars used for Short Range Interactive Motion Sensing in the 57-64 GHz Frequency Band*, DA 18-1308, Order, 33 FCC Rcd 12542 (2018) (Google Waiver).